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ABSTRACT

This paper examines collaborative research by a Brazilian public university and public elementary school, highlighting a thematic program of applied research and teaching that addressed improvement in teaching and learning quality through inservice teacher education. The project was designed to build a knowledge base of teacher learning and professional development processes and to define when, where, and how participants would intervene in these processes to refine the knowledge. Researchers examined how the constructive-collaborative intervention, which drew upon reflection of teachers' practice could help improve pedagogical actions in order to overcome school, teacher, and student failure. Data from descriptive and analytical studies, follow-up studies, ethnographic studies, case studies, observation, diary entries, interviews, and document analysis indicated it was impossible to divide practice and conceptions into reflective and nonreflective groupings. Different levels and types of reflection were evident. Teachers' degree of intensity in participation increased when discussion related to the daily practice, problems, and challenges they faced in the classroom. Teachers considered their practice their only realm of competence. Personal theories developed by teachers matched most formal theoretical knowledge. Teaching and learning experiences were important strategies in professional learning. Teachers' learning processes were more practical than theoretical oriented. (Contains 43 references.) (SM)

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Professional development of elementary school teachers: constructing and analyzing professional learning through public school and university partnership[1,2]

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Introduction

This paper reports the results of research conducted by a public university in partnership with an elementary public school, both from the city of São Carlos-SP/Brazil. The paper discusses a thematic program of applied research and teaching called 'Public Teaching', sponsored by FAPESP (Foundation for Supporting Research in São Paulo State). This program addresses the improvement in the quality of teaching and schooling processes through an in-service teacher education program developed at school. In this specific case, the investigation was conducted according to a constructive-collaborative approach (Cole & Knowles, 1993), by the Federal University of São Carlos and the Prof. Luiz Augusto de Oliveira Elementary School. It is an all-female group involving 7 researchers from the university and 27 professionals from the elementary school (the principal, the pedagogical coordinator, an assistant librarian and 24 schoolteachers from the first four grades). Most of the schoolteachers have college degrees and more than 10 years teaching experience at different grades. More than 70% passed public examinations for teaching. All are part of the permanent Board of the School and have been part of this project since its inception in 1996. The research group's main areas of qualification are Pedagogy, Psychology, Mathematics and Information Sciences. Of the 7 researchers, 6 hold a Ph.D. in Education. Four other professionals contributed to the project – three specialists from different curricular areas and one graduate student.

The goals of the project were twofold: to build a knowledge base of learning and professional development processes of teachers; and to define when, where and by what means the participants will intervene in these processes in order to refine this knowledge.

The basic research question guiding this study is: *How can a constructive-collaborative intervention, that draws on the reflection of teachers' practices in their workplace, be considered and used as a successful strategy for improving pedagogical actions in ways to overcome school, teacher, and student failures?*

Specific research areas include:

- ascertaining the population of the school, identifying who fails, when, how and why (a preliminary step to organize collective pedagogical actions, in line with the school's ethos, expressly aimed at achieving the school's success);
- developing, in collaboration with the school community, intervention strategies, which aid the construction and implementation of a pedagogical process shared by its members and the consolidation of professional autonomy;
- investigating the process of a teacher's professional socialization in its different dimensions (cognitive, affective, moral, and technical);
- analyzing the curricular components, in order to reveal how teachers' build their learning/professional development trajectories, seeking the proper identification of these

[1] Research/intervention project "The reflection on the pedagogical practice as a strategy of modification for the elementary public school as a perspective of continuing teacher education based in the work place", conducted by a group of researchers from UFSCar (Federal University of São Carlos), sponsored by FAPESP (Support Program to researchers related to public education in the state of São Paulo) – Ensino Público. 1996-2000

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trajectories, and the action, in this context, of a broader personal, institutional, and contextual influence.

This study also aims to:

- acquire knowledge about the professional development of teachers' and the best way (or ways) to investigate such issues;
- acquire knowledge about the process of conceptual development (related to the learning process and the educational phenomenon), and of practices made possible by the use of a constructive-collaborative approach;
- promote the professional development of teachers by means of the reflection on the pedagogical action according to the assumptions of the constructive-collaborative approach, centered in the elementary school;
- promote the adequate utilization of different aspects of knowledge, especially the school library, with emphasis on the development of abilities, skill to browse, and the ability to utilize the various sources of information;
- assess a methodology of a school based in-service teacher education approach, and
- offer contributions and guidelines for the development of pre-service and in-service teacher education programs.

1. Theoretical Orientation

Assuming that

- learning to teach and to be a teacher are *[...] processes and not events* (Cole, Knowles & Presswood, 1994, p. 286);
- these processes are rooted in different experiences and ways of knowing, which are initiated before formal preparation, and last throughout a teachers professional practice;
- the essence of the project is the reflection on pedagogical action as a powerful formative strategy for teachers' of the early grades of fundamental teaching under a perspective of continuous formation in the workplace,

this work is grounded on the five theoretical axis which we present and discuss next.

1.1 Teachers' thinking: a few considerations

To learn to teach is a complex process that involves, amongst others, affective, cognitive, ethical, and performance related factors (Cole & Knowles, 1993). According to Calderhead (1993) coherent and comprehensive theoretical guidelines and a general theory of knowledge about professional learning that can enlighten the processes of professional development of teachers in ways to inform the construction of pre-service and in-service teacher education programs are yet to be formulated.

Studies on teachers' thinking, on reflective teaching, on knowledge base for teaching, on tacit/practical theories etc., although based on different theoretical and methodological orientation, have been pointing to the constructive dimension of the professional knowledge; to the fact that this knowledge is developed during teaching; and to the personal dimension added to this constructive process.

Studies have also indicated that teachers' knowledge, beliefs, and goals are fundamental elements in the determination of how they act in the classroom and why they act that way; learning to teach is a developmental process and requires time and resources so that teachers' modify their practice; that the modifications teachers need to accomplish in order to contemplate new social and

political demands go beyond the learning of new techniques, implying conceptual revisions of the educational and instructional process and of the practice itself.

It is also known that: the needs of students are the focus of today's educational public policies; the structure and content of professional development programs must be determined by the teachers themselves; the educational programs need to be adapted to specific schools; adult learning processes are more related to practice than theory and that a support and professional growth environment is of extreme importance (Torres, 1998, 1999; Wittrock, 1986; Clark e Peterson, 1986; Darling-Hammond, 1994; Marcelo, 1998; Calderhead, 1996; Schoenfeld, 1997).

Current literature presents, amongst others, descriptive models of teaching processes; models of knowledge base for teaching and of pedagogical reasoning; descriptions of beliefs and types of knowledge of teachers; analytical models of narratives and stories constructed by teachers. The same literature, on the other hand, is reluctant to consider how multiple variables may shape and co-determine how the teachers act and why they act the way they do in the development of the instructional process (Schoenfeld, 1997).

Many researchers have offered important contributions to the development of a new epistemology of practice (even though that terminology is the focus of some discussion), which consider specific needs of teachers' professional development: Schön (1983, 1987, 1988), Elbaz (1983), Nóvoa (1992), Calderhead (1993), Knowles, Cole & Presswood (1994), Clandinin & Connelly (1996), Shulman (1987, 1988, 1996), Zeichner (1993), Doyle (1990), Huberman (1993) amongst others.

Despite all the different theoretical and methodological orientations under which the theme is studied, *reflective teaching* expresses the preoccupation with personal experiences and practice in the professional development of teachers. The basic assumption of *reflective teaching* is that teachers' beliefs, values, and hypotheses on teaching, subject matter, curricular content, students, learning, etc., enhance their practice. When the teachers describe, analyze, and make inferences about classroom events, they are creating their own pedagogical principles. The reflection would offer them the opportunity to gradually make their practical/implicit theory objective.

It is important to consider that *reflection* is not taken here as a synonym for *wise judgment*. It is well known that experience can lead to wrong learning and to the crystallization of inadequate and discriminatory practices.

1.2 *Reflection* as conceptual orientation

It is agreed that in this work *reflection* is *conceptual orientation*, thus avoiding conflicting ideas for teaching. According to Valli (1992), despite their differences, researchers adopt the basic assumption that reflection is a conceptual orientation, admitting different variations (emphasis in specific content and emphasis in personal experiences, amongst others). Only a reflective paradigm, says Valli, has the power to integrate distinct components of teaching: reflective teachers base themselves on personal knowledge, professional knowledge, propositional knowledge, and technical knowledge. Another benefit of considering reflection as a conceptual orientation relates to the fact that reflection is not a natural disposition. Without an explicit commitment to reflection, reflection will probably be sporadic and superficial. Valli states that there are at least six different levels of knowledge that orient the practice, grouped into two approaches to teaching: *technical rationality* (level 1 – behavioral, and level 2 – technical decision making) and *practical reflective* (level 3 – reflection-in-action, level 4 – deliberative, level 5 – personalistic, and level 6 – critical).

These six levels may be seen as hierarchical qualities of good teachers and are compatible with the teachers' use of different types of knowledge in their practice. The world of practice, in this way, understands both technical rationality and reflective practice.

By proposing this taxonomy, Valli (1992) considers the conceptions of educational excellence. The three last conceptions (deliberative, personalistic, and critical levels) are, potentially; more inclusive in what refers to educational values and social responsibility. The order suggests that certain levels must be considered as pre-requisites to others, and that certain themes or educational questions have different emphasis. A reflective orientation for teacher education should clearly contemplate the content, processes, and attitudes valued in the reflective practice.

Hatton and Smith (1995) have also studied this issue and established another taxonomy related to the way teachers use knowledge to guide their practice when writing reports, describing

the characteristics of a *descriptive report*, *descriptive reflection*, *dialogical reflection* and a *critical reflection*.

1.3 The importance of teaching-in-context theories

Although there is a vast amount of literature describing teachers' knowledge, behavior, beliefs, values, processes of meaning attribution and decision making, there is no available theory about professional learning that defines how these elements correlate and how such processes occur or might be produced/constructed in an efficient way.

Schoenfeld (1997) proposes the development of a theory of learning-in-context seeking to offer theoretical references on how and why teachers act the way they do when teaching. According to Schoenfeld, teaching is a dynamic act, responsive to the teacher's role, to what happens when interacting with students. It occurs in, and as a function of, a certain institutional context. The teacher, when teaching finds him or herself constantly observing what happens during class, and his/her acting is guided by perceptions and interpretations of these observations.

This characterization of teaching is incorporated into a model of teaching process. Focusing on mechanisms, the model seeks to explain in detailed fashion precisely what choices the teachers make at each point of the instructional process, and what beliefs, goals, and knowledge these choices depend upon. As a model, it is a useful aid to deal with a complex phenomenon: the behavior of teachers in action.

The model offers theoretical anchorage to the *teaching and learning experiences* conceived by this project and conducted as a strategy for professional development (formative strategy) and the understanding of this process (investigative strategy).

1.4 Knowledge for teaching: knowledge base and the process of pedagogical reasoning

Schulman (1986, 1987) proposes two models for the investigation of the role of knowledge in teaching, for the foundations of knowledge base for teaching, for pedagogical processes of reflection and action involved in teaching: the *personal knowledge base* and the *process of pedagogical reasoning*. Both theoretical orientations consider different types of knowledge for teaching and the processes by which this knowledge is constructed and utilized.

By knowledge base we understand the body of understandings, knowledge, abilities and dispositions necessary for the effective teaching in specific situations (Wilson, Schulman, & Richert, 1987). Among the foundations of this knowledge base we have different kinds of knowledge that support the decision making process of teachers (Schulman, 1986, 1987):

- *specific content knowledge* (basic concepts of an area of knowledge which implies comprehension of ways of thinking and understanding the construction of knowledge in one specific area and its structure);
- *general pedagogical knowledge* (knowledge that transcends the realms of one specific area and includes the knowledge of educational goals; of teaching and learning; of classroom management; of teacher-student interaction; of instructional strategies; of how the student learns; of other contents; of curricular contents) and
- *pedagogical content knowledge*. by exercising their profession, teachers develop a new kind of knowledge of their specific area which is improved and enriched by other types of knowledge (student's, curricular, other areas, and pedagogical). This is the *pedagogical content knowledge*, which can be considered a new type of knowledge, for it embodies the more relevant aspects of the contents to be studied, by means of more pertinent concept representations, of powerful analogies, illustrations, examples, explanations, and demonstrations (Schulman, 1986). It also includes the understanding of what makes it harder or easier to learn specific issues or topics, and the conceptions and pre-conception of students of different ages and backgrounds.

According to Schoenfeld (1997), what a teacher can perform in one specific situation is fundamentally shaped by a group of intellectual resources that he or she brings to the teaching situation. This is called the *knowledge base*. The plans of action – in diverse levels – occupy central position and can be used to activate the goals. This is a broad category that includes a variety of

knowledge both general and classroom related, including the knowledge of interactive routines, considered by literature as being basic to teacher education processes: Shulman (1986, 1987), Calderhead (1996), Clark and Peterson (1986), Fenstermacher (1994), Darling-Hammond (1994).

Taking the contents of knowledge into consideration, literature has pointed to a broad variety of categories: personal practical knowledge (Elbaz, 1983; Connely & Clandinin, 1988), knowledge-in-action (Schön, 1983, 1987), professional knowledge (Calderhead, 1996; Tardif et al., 1991; Huberman, 1993) case knowledge (J.H Shulman, 1992; Shulman, 1992, 1996); educational foundation knowledge (Grimmet & Erickson, 1988), metaphors (Clandinin, 1986), and many others equally important to the process of the professional development of teachers.

The same distinction made by Shulman is adopted by Schoenfeld (1997). According to Schoenfeld, beyond the inventory of knowledge, a second basic point that permeates all the aforementioned categories refers to how the knowledge is accessed and used. This point is crucial to the elaboration of a teaching-in-context theory.

Schoenfeld (pg. 25) considers that it is accepted by Psychology that

> *...people organize their experiences mentally via mental representations of familiar 'classes' of experience. The most common name for such abstraction is 'schema' (plural schemata); related terms are scripts and frames. Attached to a schema are its typical features, some knowledge related to it, and typical ways of behaving when that schema has been called to mind.*

The main idea behind the *schema* is that the human being abstracts its world experiences and uses such abstractions as a means to perceive and interpret elements when interacting with them. Bearing in mind that one of the dimensions of the memory is that it groups its repertoire in chunks, and that another is its associative property, when a particular item comes to mind other related items also will come. To bring a particular item to mind, is to bring not only the knowledge related to it that the individual may possess, but also to bring beliefs and emotions along with it. An event that triggers particular beliefs can also trigger knowledge related to such beliefs. The notion of *schemas* is also present in Gimeno Sacristán (1991), who offers descriptions and understandings related to the professional learning of teaching.

The process of pedagogical reasoning (Shulman, 1987; Wilson, Shulman & Richert, 1987) consists in a process of reasoning and action involving six aspects common to the act of teaching: comprehension, transformation (interpretation, representation, adaptation, and consideration of specific cases), instruction, evaluation, reflection, and new comprehension. By means of such process, the professional knowledge may be constructed.

1.5 The school as an organization that learns

Taking into consideration the fact that teachers need time and mental space – which should be guaranteed institutionally and by public policies – in order to develop themselves professionally (McDiarmid, 1995), the school as a work environment assumes considerable importance in the promotion of the professional development of its members. This development, embodied by the schoolteachers, is converted into improvements for the school and for the teaching-learning process. It is very important that the system or educational institution perceives itself as an organization that learns through the dynamics that follow and provides change as a function of its necessities and goals.

The concept of organizational learning considered here includes: learning with the results (products), that is, to acquire information (knowledge, understanding, know-how, techniques, or practices); learning with the process or with the way these results were obtained, acquired, or processed; how the information was stored; and to consider the apprentice to whom that process is imputed (Argyris & Schön 1996).

According to Argyris & Schön (1996) an organization that learns is the one in which each member constructs his or her own representation of the theory-of-action implicit in the performance of a pattern of activity.

It can be said that organizational learning occurs when its members experience a problem situation and inquire and reflect, adding to the collective knowledge of the organization. As a result of this process there may be modifications of the theories-of-action in use.

Argyris & Schön (Ibid) emphasize that such results can only be considered as organizational learning products when they are accompanied by *changes in the behavior* (indicators

of alterations in the organizational theories) and of action in use and only when they bring individual images (memories, maps, or programs) that store organizational knowledge.

An organization that learns needs a formal way to establish questions, searching for theories and testing them, at the same time continually reflecting over those same theories.

The process of professional development and learning, if adopted and incorporated by the school, has the potential to constitute the axis of the school's leaning in its search for offering teaching and learning processes which effectively make a difference for all the people involved, be they teachers, administrators, students, parents, or community. In order to make that accomplishment, the schoolteachers need to be engaged in professional development activities and time and mental space (McDiarmid, 1995).

2 The Research – Methodological Orientation

By investigating the processes of professional learning and development of teachers, one of the primary goals of this project is the design and implementation of a program that engages the schoolteachers in their professional learning and development processes. This program is expected to bring improvements to both teachers and school and to be a permanent presence in the school's activities, even after the research ends. It is also expected that the program will, in a short time, exert an impact on the learning and teaching processes developed in and by the school. The study contains characteristics of action-research, in the understanding of action oriented by research, and research based on action, reflection, in decision making processes, and self-evaluation (Bayne-Jardine, 1994). Reflecting the theoretical orientation, the methodological approaches include descriptive and analytical studies, follow up studies, ethnographic studies, case studies, and the use of several data sources (observation, participant observation, diary entries, interviews, document analysis etc.), pertinent to each of the issues studied.

2.1 The research's development and the construction of teaching and learning experiences

The biggest challenge continually faced during this research has been to construct investigative and formative strategies that, in a procedural way, aim to provide (even if provisional) an answer to the problem under investigation.

The ten weekly hours given to the schoolteachers comprised, in addition to classroom work, two hourly meetings each week, with all participants from the school and researchers from the university. The remaining six hours are devoted to the development of individual and group activities.

A significant part of the activities developed during the first year of the project was dedicated to studying the conceptions of schoolteachers with regard to the diverse aspects of the educational phenomenon, the teaching profession and the pedagogical practice. The data is extracted predominantly from oral or written reports made by the schoolteachers, related to these conceptions. The partial results obtained relate to different concepts (including pedagogical practice) investigated in accordance with the views of the teachers.

During the first year of research we dealt with situations that could be considered reflection on action and with narratives that make evident beliefs, values, and personal theories of the participants. Relations between conception, practice and dimension of the professional development of related in-service teacher education were also investigated during this period. Finally, as this project is the first collective experience in research for all the participants, we started to form the basis of a common language to enable the participants to communicate.

From the second year of the project, teaching and learning experiences, as labeled by the research group, was the main focus of the project. These experiences are defined as

> *[...] structured situations of teaching and learning, planned by the researchers and schoolteachers, implemented by the schoolteachers, collectively discussed, originating from issues chosen by them individually or by the group. They are experiences with a beginning, middle, and an end—and may be developed by small groups or by each teacher with his or her students. These experiences are born from practical difficulties*

> *related to different subject matters; challenges, which may rise from, school daily activities; and public policies* (Mizukami et al., 1998, p. 3).

The teaching and learning experiences realized up to this stage are: Knowing the School's Students; Sciences; Mathematics; Portuguese; School-Family Relationship: Let's Help Our Children Project; Assessment of the Teaching-Learning Processes; Analyzing Student Errors in the Portuguese and Mathematics Subject Matters; Library Use in School; Listening and Telling Stories; The School Library as Space of Knowledge; Understanding the National Curriculum Guidelines for Elementary School Teaching.

These experiences have proved to be powerful strategies for intervention and shared work. They make the development of reflective processes at different times and levels possible as well as answering the research questions. Using these experiences as a starting point it was possible to analyze the teachers' at different phases of their teaching and learning experiences; to understand specific learning by the teachers in real teaching and learning situations where they are challenged to reflect, verbalize their beliefs, and describe their practices, taking into account experience; to construct situations of reflection-on-action with narratives that make evident beliefs, values, and knowledge; to visualize everyday school situations that require decision making, interpretation, evaluation, and elaboration of new plans of action from the teachers and, in a non-invasive way, to access the classroom processes effectively developed by teachers.

With decisions made during the research process, and adopting a qualitative research paradigm, most of the basic sources of data were: participant observation, interviews, reflective diaries, material produced by students, minutes of School Board meetings, oral and written reports, documents and PTA meetings. The data, which was the basic source for the collective planning of actions/interventions/investigations was analyzed. It should be understood that this is a case of research-action.

Many methodological questions were raised during the project's development. They predominantly refer to the process of investigation made by a team of researchers from different backgrounds and who continually perform many diverse roles. From this viewpoint, collaboration is understood to be a product of relations and contributions of different natures.

Wasser & Bresler (1996, p. 6) conceive interpretation as a collaborative act and utilize in their work the concept of *interpretative zone*, which is defined as *...the place where multiple viewpoints are held in dynamic tension as a group seeks to make sense of fieldwork issues and meanings*.

The project group is also considered to be an interpretative tool and, for that reason, the analysis made by Wasser & Bresler are pertinent. According to them, the group is a critical methodological tool, even though they admit there is lack of descriptions and dense analysis related to the interpretative process developed by groups of researchers.

> *We often assume that what we know of the ways that individuals conduct qualitative research can be transferred to what groups do, but we have not truly considered the differences between these two situations and the fit or lack of fit between them (p.8).*

Wasser & Bresler point out methodological questions that are critical to the interpretative processes of qualitative research and which, until now, have not been adequately contemplated by teams of researchers (p. 8). These questions are also faced in the current project (taking into consideration all of its peculiarities): what are the main ethical issues faced by the research team regarding access, confidentiality, and reciprocity? How should themes related to voices be investigated by practical and theoretical points of view? What are the costs and benefits derived from a research team? What are the credibility issues involved in the group's interpretative process? Is consensus a necessity? How can *interpretative consensus* be defined? How can a research group arrive at an interpretation? How can the adoption of this interpretation represent the multiple voices involved? Such questions, not yet answered, are related to the interpretative zone.

The group as an interpretative tool, according to Wasser & Bresler (p. 8), has shape, *color, tone, value, style*, and possesses multiple voices that work as multiple lenses. The group faces at every moment a continuous process of putting to the test and clarifying those interpretations which demonstrate how important and complex the issue related to beliefs and suppositions underlying the interpretative process is. Its members have their roles and positions changed when they

observe the concerns, themes, questions, and problems, of the other members. This process allows for each member to see the data from new positions and manners. The group also faces situations that involve ambiguity and truth. Contradictions arise in the face of different types of knowledge. Uncertainties are found in problematic situations; perplexities, difficulties, and obstructions are present in the interpretative process. To Wasser & Bresler, trust as moral and political instance is of extreme importance because the dialogical inquiry must, by definition, comport a certain amount of ambiguity which can be considered in different ways, depending upon the circumstances under which they are created.

From this perspective, trust is a necessity for collaborative projects. It is, nonetheless, a complex and multifaceted notion. The kind of trust needed goes beyond mere listening and tolerance. It includes the certainty that the message of whoever speaks will be taken seriously and will, in a sense, affect the outcome of the project. There is also the trust nurtured by conversational inquiry – the one members must have for the group to tolerate ambiguity, misunderstandings, clash of points of view, and continuous discussion, even when it becomes uncomfortable to put oneself in another's shoes.

Wasser & Bresler (1999), reporting a process on a group research they have experienced, explain:

> *The process of becoming a group with the specific purpose of forging interpretative meaning in our collective meetings occurred on both conscious and unconscious levels. Developing a meta-awareness of group as an interpretative tool was not an isolated occurrence; it unfolded in tandem with deepening awareness of our reflexive processes on a number of fronts. This meta-awareness provoked us to think about the ethical issues implied in the multiple roles we occupied, not only in relationship to each other, but also to those in the field to whom we were connected both directly and indirectly through the interpretative meetings. In hindsight, it has also raised questions for us about issues of costs and benefits, as well as about the ways we 'fix' our interpretation (p.11).*

2.2 Collaboration, and academic and practical knowledge

Methodologically speaking, this project faced dilemmas relating to what educational research literature considers as collaborative research, action-research, academic knowledge, and practical knowledge (academic research and practitioner's research), that is, academic paradigms *versus* practitioner's research.

By assuming a constructive-collaborative model, we are at the same time aiming at investigating the professional development process of elementary school teachers and promoting said process for all members of the group (university and school). Considering the peculiarities of this kind of research and the still recent dilemmas of investigations that involve researchers in the investigated situations as participants and co-authors of the actions, but also as investigators of the triggered and experienced processes, we present here some central points which have agglutinated the preoccupation and efforts of the research group.

- *The paradigm 'wars and the battle of snails'*

Dilemmas are currently faced in relation to new ways of producing and constructing knowledge, and of researching knowledge production, with emphasis on the processes involved in professional learning. To consider the knowledge constructed by the practitioners as having their own space in the universities, according to Schön, means to be in the middle of an epistemological battle. ...cit....

By analyzing the nature and specificity of research conducted by practitioners, Anderson & Herr (1999) indicate that they make the practitioner a stranger (and frequently a suspect) to the researchers who work with academic research paradigms. This specificity refers to aspects such as: the consideration of the role of the researcher as an internal element of the process; the centrality of the action; the requisite (in the form of a spiral) of the self-reflection on actions and the relations of proximity and intimacy of the research with the practice.

Anderson & Herr (1999), analyzing two metaphors – the paradigm wars, of Gage, and the battle of snails, of Schön –, explore the ways the institution reacts and answers to alternative processes of knowledge production, to alternative forms of knowing that may be seen as a menace to its legitimacy. They consider not only the resistance within the academic community in order to legitimate the research conducted by practitioners, but also the menace represented by a vision of professionalism based in a rigorous inquiry – conducted by the practitioners – to the public schools,

as they are currently structured. Anderson & Herr also discuss how rigorous research developed by practitioners are seen through some criteria of validity related to evaluation rigor and explore how the colleges of education are answering a crisis that is being aggravated because of the legitimacy of its own model of knowledge creation and dissemination. The answers to the dilemma tend to involve or marginalize new epistemologies or to consider these epistemologies as second class category knowledge. Equally, this offers in the face of the present situation, suggestions related to commonalties and collaboration possibilities between the two cultures.

The authors believe the legitimization of the practitioners' researches in the universities constitutes a complex problem, *[...] since members of these communities must legitimate themselves to one environment which includes both a university culture that values basic research and theoretical knowledge and the professional culture of schooling that values applied research and narrative knowledge* (Meyer & Rowan, 1977 apud Anderson & Herr, 1999, p. 12).

The current educational debate circles around a central question: is *practitioner research* really research? What is, effectively, the epistemological statute of *practitioner research*? To Anderson & Herr (1999), two tendencies occur at the same time: either *practitioner research* will resist the universities and the schools, or it will be domesticated by means of new techniques aimed at improving professional development.

In the light of this scenario, the authors propose to leave the battlefields and make productive alliances that imply links to outside research. They also mention possible alliances between those who are within the investigation process (practitioners) and those who conduct this process and are considered to be outsiders (academics). While practitioners, researching their own environment, can share certain goals with the qualitative research, such as trying *to turn the familiar into strange*, they face methodological dilemmas that are fundamentally different to those of the outsiders.

- *Collaboration, collaborative research, action-research, and professional development*

Clark et al. (1996, 1998) offer an important contribution to the debate based on the concept of what is important to this project's theoretical and methodological orientation. They see collaboration as being dialogue, implying that schoolteachers and university researchers engage in conversation, exchange of experiences, and professional development.

They place the foundation of collaborative research at the beginning of the action-research processes, meaning an approach by inquiry that not only generates theory and knowledge, but also contemplates everyday problems of school practice.

Although specific formulations and definitions vary, action-research is always characterized through four basic elements: collaboration, focus on practical problems, emphasis on professional development, and the need for time and support. Collaboration is the key element of the four elements presented, for it makes mutual comprehension, consensus, democratic decision-making, and common action possible.

However it seems that there is no consensus when it comes to finding a meaning for collaborative research. Clark et al. (1996) raise a number of characteristics found in literature on collaborative research: to ensure that the participation of all parts and phases of the project; parity work and equal responsibilities to all the participants in identifying, inquiring, and solving problems; involvement of the participants in the delimitation of research questions; choice of methodology and the making of research reports.

All participants may not, however, have the same amount of time, energy, involvement, or interest available in order to be *equal owners*. To require these conditions from all participants may lead to a non-empowering experience. To the authors, the most pertinent meaning would be of a group work that involves exchange and mutual help.

A characteristic that underlines the many ideas about collaboration and collaborative research is the ability to improve professional development – opportunities for reflection on practice, shared criticism and supported changes. Considering the demands of the professionalism of teachers, it seems wise according to the authors, to continue to contemplate educational issues in a collaborative way.

We consider this project to have great potential for professional development and collaborative processes for schoolteachers and university teachers alike. This development has

occurred, partially, thanks to conversations and shared dialogue. However we do not consider collaboration to be a synonym of participation in all the parts of all the phases of the project.

Clark et al. (1996) mention that educational theorists frequently speak of changes in practice and reflection that result from the involvement of teachers in collaborative inquiry processes, but little is said about the impact of these interactions on the university. The authors agree that learning occurs by means of collaboration. According to them, the participants gradually feel more comfortable regarding the changes. The resistance to change, nonetheless, continues to envelop the relationships. All the participants change, be those changes related to practice, theory or expectations.

John-Steiner, Weber, & Minnis (1998), replying to Clark et. al (1996), indicate that identifying powerful tension in the research is of great importance, since this tension refers to the unequal benefits for the schoolteachers and academic researchers engaged in research and in its dissemination. They consider dialogue an important tool for facing asymmetric relationships and defend the necessity for a theoretical structure in order to develop and to present the research. They understand that in looking for similarities and differences in diverse contexts, activities, methods of teaching, goals and values, a conceptual framework to understand the collaboration may be constructed, preserving the benefits of richly descriptive reports.

The authors also mention the necessity of identifying the different patterns of collaboration. According to them, in by product orientated collaborations, for instance, the role tends to be clearly delineated and efficiency is a primary goal. In more integrated collaborations that emphasize the process, on the other hand, dialogue and empowering results lead to more flexible roles and work division. Compared to the identification of themes, the theoretical development can systematically go forward, analyzing collaborative performance by means of situations, participants and objectives, as well as personal and disciplinary resources.

Collaboration generates multiple products and questions. To Clark et al. (1996), this includes growth and mutual collaboration amongst the participants – schoolteachers and university researchers. Other dimensions of their work also need to be taken into account and evaluated, according to John-Steiner, Weber & Minnis (1998) who perceive impacts of the collaboration on the teacher-teacher and teacher-researcher interactions; as well as improved relationships and mutual support amongst the teachers to be important results that need elaboration, response, and theoretical comprehension.

These authors believe there is an urgent need for the construction of a collaboration theory that explains the multiple definitions and multiple models of collaborative practice.

3. Preliminary results

The preliminary results of this research were analyzed by taking into consideration the adopted theoretical and methodological orientation; the learning-in-context theories; the institutional conditions related to the implementation of public policies in education; strategies of professional development centered in school practices; the conception of the school as an organization that learns (Schön & Argyris, 1996); and the research group as an interpretative tool (Wasser & Bresler, 1996). They can be summed up as follows:

The conceptions manifested by the schoolteachers make evident basic points that need to be considered with regard to what could be named a reflective process. The reports that were presented and the collective discussions were very uneven. Some considered only isolated facts, while others contain unjustifiable judgments of value. Improper causal relations are presented as naturally acceptable and valid. Registers of events without respective justification were also presented numerous times. At other times, reflections based on multiple perceptions were verbalized. Some of the schoolteachers tried to offer a number of alternatives to explain similar phenomenon, to elaborate hypotheses. Reflections that involve the consideration of historical, social, and school contexts were seldom found. A number of reflections only consider the instruction aspects of specific classroom situations. Many refer to the students only in relation to their academic performances, while others try to study the students as the complex entities they are, evaluating a variety of their activities in and outside school, family, and other environments. The consideration of teachers' reflective practice as a dichotomous variable may, under these circumstances, appear to deceive the perceptions of their entire professional development

dynamics. The data obtained show that it is impossible to divide practice and conceptions into reflective and non-reflective groups. Different levels and natures of reflection exist. Reflection considered as conceptual orientation may seem to most closely approximate the dynamics of the schoolteachers' professional development.

Even when reflection is perceived as conceptual orientation, some issues must receive special attention. Following Valli's taxonomy, the most inclusive level of reflective practice is the sixth level, the critical level, that involves *problematizing the goals and purposes of the schooling in light of justice and other ethical criteria* (Valli, 1992, p. 220). By analyzing the manifested conceptions of the schoolteachers, one might have a wrong interpretative appreciation of this level of reflective practice. The conceptions that describe the goals of schooling in light of social justice and ethical criteria, do not necessarily imply the development of competent quality teaching nor necessarily imply a commitment that aims to empower the students of different social and cultural levels.

Taking Valli's (1992) and Hatton and Smith's (1995) proposed categories as references, it was possible to identify, in certain cases, some of the levels they have described. The conceptions presented by the schoolteachers can also be analyzed with the use of reflexive teaching literature. Different levels and kinds of knowledge and reflection are observed. It seems that reflection as a conceptual orientation (Valli, 1992; Hatton & Smith, 1995) can be applied. The schoolteachers' conceptions are often presented by means of descriptive reports in which they only register events without offering elements that justify or explain their occurrence. The preoccupations are focused on acquisition of management behavior derived from research on teaching. Some of them present elements of technical decision making in which the expected student performance is emphasized. Nevertheless in these cases, the schoolteachers develop analyses of their own behavior. Other reports offer indicators of a reflective description describing events and justifications based on personal judgment. Alternative points of view are also offered, as are references to processes related to reflection-in-action, in which the pedagogical activity is considered a centerpiece for knowledge construction mobilizing the existing knowledge in order to re-structure plans of action from unexpected messages about the environment. However the most complex levels of reflectivity, were not to be found.

The data suggest the schoolteachers' conceptions match the appointed axis and, from this, it can be inferred that the configuration of a set of conceptual orientations may include orientations that are not coherent amongst themselves. One schoolteacher can, in her set of conceptual orientations, present contents of a diverse nature. She can also present indicators that suggest changes from a less elaborate level to a more complex one.

The schoolteachers' thinking expressed through oral and written reports refers, in general, more to events than to conceptual explanations. At this stage of the project it was observed that some of the teachers underwent a process of change regarding focus. Their analyses started to take into consideration the situation as a whole, other than isolated details of the event. Attempts to generalize from particular elements are still found, but some teachers appear to be more cautious in taking that approach. The project's most recent group of was more centralized in events than in conceptual explanations. Some of the teachers who have been part of the project since the beginning have learned to produce broader and more complex analysis, and do not attach themselves exclusively to examples, which on many occasions constitute particular cases.

Still, in relation to the investigation of reflective processes, a study on how false principles can be induced through experience sounds appropriate. Not considering reflection as a synonym to wise judgment admits that experience may also lead to wrong learning. Experience may also create a new fashion (according to the terminology of current public policies or learning theory) to replace old and crystallized pedagogical practices. This seems to be a professional learning that apparently resists, and is difficult to change or remove.

Schoolteachers' degree of intensity in participation and involvement increases when the discussion is related to their daily practices and to the problems, dilemmas, and challenges they face in their classrooms. The types of intervention developed seems to increase the probability of this pattern of behavior considering strategies that create unbalanced situations and stronger engagement of the schoolteachers in order to face and to overcome them.

In relation to theoretical issues, schoolteachers are more reluctant to participate and difficulties in the verbalization of theoretical issues are frequently observed. The impression remains

that the teachers consider their practice as their only realm of competence. Theoretical knowledge, by their understanding, resides solely in the researcher's domain. The schoolteachers are only now beginning to see themselves as researchers for their own practice and act upon this new found belief.

Personal theories – beliefs, values, perspectives, attitudes and ideas developed by means of professional or personal experience – developed by the schoolteachers seem to match most formal theoretical knowledge.

The teaching and learning experiences have revealed themselves to be important strategies in the professional learning of participants. They have shown themselves to be invaluable tools for the enhancement of professional development; especially those involving closer relation to the teachers' own subject matters. All participants in the project were offered real situations in which different types of knowledge can be accessed and related to one another. They were also offered opportunities to reveal their doubts, to question their certainties and to witness their ignorance. The professional development processes of the schoolteachers, nonetheless, are not linear or homogeneous. Idiosyncrasies and peculiarities are observed in each of them, which makes the process of generalization in this stage of research arduous. When the teaching and learning experiences directly involve subject matter areas, the matching of different kinds of knowledge, beliefs, goals and hypotheses underlying pedagogical practices and part of the knowledge base for teaching and the process of pedagogical reasoning can be seen.

Some of the schoolteachers were keen to talk openly about methods and to confront their teaching with their colleagues'. They suggested strategies; discussed their teaching in a non-defensive ways and gradually allowed access to some of their secret stories (Clandinin & Connelly, 1996).

The dimensions and peculiarities of adult learning must be also considered. The learning process of a schoolteacher is more practical than theoretical oriented; the teachers' interests are higher when proximity – of themes, experiences, and activities – to the world of practice is closer.

The professional dimension of the schoolteachers' and the knowledge base for teaching assumed by them seems to be rooted in two content areas: Portuguese Language and Mathematics respectively. Portuguese Language – especially the literacy process – seems to be the focus of the professionalism of the elementary teachers.

The data show, in a number of ways, that the construction process of pedagogical content knowledge is of primary importance in the professional development of schoolteachers. In order to accomplish this, they need time and effective learning opportunities to be able to rethink not only their role in the classrooms, but also their pedagogical practice. They also need to overcome possible resistance in order to create practices more compatible with school population and with the principles defended by public policies of education.

Sharing the same grade teaching experiences appears to be a facilitator on settling professional and personal relationships between teachers. Whether or not to teach the same grade may not make a difference when the bond between teachers is deeper. Furthermore, the conditions for partnership are not always the same for each member of the group.

The dynamics utilized by the research team could perhaps be mobilizing, catalyzing, or explicating processes that are latent in the institution: the investigation of relationships between members of the group and the position they occupy in the group itself also seems necessary.

Situations that consider the context of the teachers' activities seem to mobilize deeper beliefs that escape the censorship of the current dominant discourse exerted by, for instance, public policies. These policies have fuelled the teacher education programs and governmental proposals and, in a way, are incorporated by the teachers in their own conversations, but do not necessarily match their beliefs. Learning in specific context seems to encompass the realms of teacher education, teacher expression, and who knows, the change of old beliefs to new ones that show the meaning of teaching in daily activities and not in its social finality.

In a similar way to that faced by Wasser & Bresler (1998), the present research group was initially seen as having a fixed structure in the project. However, this structure went through changes when members started to create an identity for the group: by assuming different commitments, creating rituals and routines in order to give it form (labeling activities, structuring meetings, publishing reports, etc.), and making explicit group related values. During the three years of this project the participants have given interpretative meanings, raised ideas, contested opinions,

redirected processes, reaffirmed or reformulated convictions, etc., in ways that make it impossible, currently, to establish clear lines between individual contributions. Many of the individual contributions have been possible only through the group. The construction of the group process and of the group itself as an interpretative tool went through various individual and collective understandings which generated many changes to the project which in turn redirected it to the investigated problem as well as to the formative and investigative processes under consideration. The professional development process, previously seen as unidirectional, became known as bi-directional, that is part of individual and group work. The interpretations that, in the beginning tended to be more topics oriented, started to assume a process orientation. The project has also undergone different processes of decision making which affected the group construction in relation to the theoretical and methodological orientations to be adopted. During this process, the concept of *interpretative zone* has been especially important to understanding the different group dynamics.

Final Considerations: *...walking with boots of lead*

A work of this nature presents challenges that are inherent to the peculiarities of the adopted model. In that sense, the project's development has revealed that:

- The inclusion of the research group into the school's environment and the construction of a shared program of professional development is a process that can be considered unstable and needing to be reworked at any given moment, thus demanding a high degree of involvement from its participants. During this study, the processes of legitimization or non-legitimization of the discourse over pedagogical practice became noticeable, demanding constant reviews of the dynamics of the school group, the research group and the group of all participants in the continuous process of negotiation.
- The nature of the participants' process of development itself must be considered. It is not linear, and is characterized as a continual learning. In this sense, the success happened slowly and depended upon arduous and systematic investment. Also, it was necessary to guarantee a space for common discussion and group construction
- In the last year of the project we intend to continue the development of teaching and learning experiences as they have proved to be an invaluable strategic component of intervention and shared work. This makes it possible to develop the reflective processes at different stages and levels. Two interconnecting experiences are being planned: (1) individual and collective projects of professional learning and development having actual public policies as its axis (the National Curricular Guidelines for the Elementary School); and, as strategy, reflective diaries, and group situations exchanging classroom experiences; and (2) theoretical discussions, through, for example, individual interviews. In this way we intend to prepare the school for the withdrawal of the university research team once collective and individual autonomous processes of professional development have been settled.
- The difficulties that show themselves relate to the processes of implementation of public policies, many of which do not reach the classroom or, when they do, possess language, format, or ideas that are difficult to incorporate (especially those relating to the possibilities of didactic transpositions that should guarantee incorporation into the daily classroom activities).

All the participants found the processes so far experienced to be slow, arduous and absorbing. The small changes are the seeds of more significant changes and the project's development is showing significant indications to support this statement. The progress and success are not linear to all those involved. Nevertheless, they possess a common aspect easily perceived by means of a metaphor constructed by a 3rd grade teacher:*...it's as if we were walking with boots of lead.*

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